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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,776	09/23/2003	Tapio Kuiri	KOLS.056PA	3302

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EXAMINER
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JACKSON, BLANE J

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 01/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/668,776

Applicant(s)

KUIRI, TAPIO

Examiner

Blane J. Jackson

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11-13 and 15 is/are rejected.
- 7) ☒ Claim(s) 7-10 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 11- 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ben-Efraim et al. (US 5,999,793).

As to claims 1, 11 and 15, Ben-Efraim teaches method and a direct conversion receiver of a digital broadcast satellite communication system (column 6, lines 4-24), the receiver comprising:

An integrated phase locked loop for generating output frequencies (figure 4, frequency synthesizer (426)),

A frequency control unit for providing a frequency control word for the phase locked loop according to which frequency control word an output frequency is generated (microcontroller (488) functions as a "frequency control unit" and sets counters (434) and (436) with a digital control word or "frequency control word" to derive the desired tuning frequency, column 7, line 13 to column 8, line 43),

A tuning unit for providing a *tuning word* for the phase locked loop, the tuning unit being configured to output the tuning word into the phase locked loop in time with the output of the frequency control word (microcontroller (488) also functions as a "tuning unit" to supply a

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binary word to the gain adjustable charge pump, column 5, line 52 to column 6, line 3 and column 13, lines 61-67).

Ben-Efraim discloses the microcontroller derives two digital tuning words, a frequency control word in the conventional sense of a PLL and a tuning word to control the PLL gain at the charge pump to compensate for the nonlinear relationship between the control voltage and the resonance frequency of the oscillator tank circuit due to the nonlinear characteristics of the selected varactors, column 5, line 52 to column 6, line 3 and column 8, lines 44-49. Ben-Efraim is silent as to the tuning word is synchronized with the output of the frequency control word. Since the tuning word, like the frequency control word is provided to tune the PLL over the entire frequency range, it would have been obvious to one of ordinary skill in the art at the time of the invention to realize the output of the tuning word and the conventional frequency control word of the PLL as taught by Ben-Efraim would necessarily occur at the same time, or synchronized, in accordance with the selected frequency channel to provide a constant phase locked loop response over the frequency range of the tank circuit.

Also, Ben-Efraim does not teach a mobile station of a cellular telecommunications system; however, he does teach an integrated direct down conversion receiver with a broad range frequency synthesizer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the performance of the receiver tuner chip with the frequency synthesizer of Ben-Efraim equally applicable to other wide band transceiver applications.

As to claim 2, Ben-Efraim teaches the phase locked loop includes an integrated voltage controlled oscillator for generating the output frequency proportional to a voltage level inputted into the voltage controlled oscillator wherein the tuning unit is configured to output the synchronized tuning word into the voltage controlled oscillator (figure 4, PLL (426), VCO (450) and the charged pump (448) accepts the tuning word on binary inputs (454)).

As to claim 3 with respect to claim 2, Ben-Efraim teaches the voltage controlled oscillator includes a tuning circuit for providing a plurality of frequency tuning configurations, a frequency tuning configuration contributing to frequency characteristics of the voltage controlled oscillator (figure 4, a control voltage from the loop filter (410) and charge pump (448) determines the capacitance of the varactors in the resonant tank circuit (412) to result in the tuned frequency of VCO (450)) and

the tuning unit is configured to output the synchronized tuning word for the tuning circuit in order to set a frequency tuning configuration (microcontroller (488) outputs the tuning word to adjust the gain of the charge pump (448) to compensate for nonlinear of the varactors in the resonant tank of the VCO (450), column 4, lines 24-35).

As to claim 4 with respect to claim 1, Ben-Efraim teaches the phase locked loop includes an integrated charge pump for generating an output current proportional to the synchronized tuning word and the tuning unit is configured to provide a synchronized tuning word for the charge pump in order to tune the gain of the charge pump (figure 4, charge pump (448) with configurable gain, column 4, lines 24-35 and column 13, lines 61-67).

As to claim 5 with respect to claim 1, Ben-Efraim teaches the phase locked loop includes a feedback divider connected to the frequency control unit, the feedback divided being configured to generate a feedback signal with frequency proportional to a frequency control word and the frequency control unit is configured to output a frequency control word into the feedback divider (figure 4, microcontroller (488) sets counters (434) and (436) to set the desired tuning frequency, column 7, line 32 to column 8, line 29).

As to claim 6, Ben-Efraim teaches the tuning unit is configured to output the synchronized tuning word in parallel format to the phase locked loop (pair of binary inputs (454) to the charge pump (448), column 5, line 53 to column 6, line 3).

As to claim 12 with respect to claim 11. Ben-Efraim teaches including outputting the synchronized tuning word into one element selected from the group including a voltage controlled oscillator of the phase locked loop, a charge pump of the phase locked loop (figure 4, pair of binary inputs (454) from microcontroller (488) to the charge pump (448), column 5, line 53 to column 6, line 3 and column 13, lines 61-67).

As to claim 13 with respect to claim 11, Ben-Efraim teaches outputting the synchronized tuning word in parallel format to the phase locked loop (pair of binary inputs (454) to the charge pump (448), column 5, line 53 to column 6, line 3).

***Allowable Subject Matter***

2. Claims 7-10 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hietala (US 5,495,206), Boesch et al. (US 6,157,821), Griffith et al. (US 6,680,653), Humphreys (US 6,724,265), Chaudhuri et al. (US 6,977,537), Ravi et al. (US 6,885,873) and Muschallik et al. (US 6,636,727).

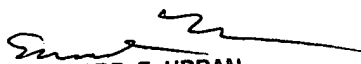
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJJ

  
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